

# Mineral Industry Surveys

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## TIN IN APRIL 2002

Domestic consumption of primary tin in April was estimated by the U.S. Geological Survey to be 1% lower than that in March and 8% lower than that in April 2001.

The Platts Metals Week average composite price for tin in April was \$2.89 per pound, an increase of 4% from that in March, and a decrease of 16% from that in April 2001.

Ohio Coatings Co. (Yorkville, OH) has positioned itself in a niche of the American tinplate market. Ohio Coatings is a joint venture of Wheeling-Pittsburgh Steel Corp. (Wheeling, WV), Dongyang Tinplate Corp. (Seoul, Republic of Korea), and Los Angeles-based Nippon Steel Trading Co. Ltd. (formerly Nitetsu Shoji America Inc.). Ohio Coatings operates an electrolytic tinplating line with a rated capacity of about 250,000 metric tons per year (t/yr), a capacity the company is on pace to exceed by about 30,000 t this year. The expansion is continuing, although Wheeling Pittsburgh Steel is operating under Chapter 11 bankruptcy protection. Ohio Coatings is the smallest tinplate producer in the United States, in what is generally regarded as a low growth market.

Ohio Coatings, which was established in 1995 and was the first electrolytic tinplating mill to be built in North America in over 30 years, replaced two older tinning lines formerly operated by Wheeling-Pittsburgh. The firm makes tinplate coils for food containers, oil filters, and other general line uses. The company distributes products to 23 end-use customers through both Nippon Steel Trading and Wheeling-Pittsburgh. More than 70% of its black plate raw material is supplied by Wheeling-Pittsburgh, located a few miles away and the rest is purchased on the open market. Ohio Coatings ranks as one of the larger tin consumers in the United States (American Metal Market, 2002b).

In Brisbane, Australia, gold miner Sirocco Resources NL announced that it would become a tin producer under an agreement to buy the Renison Bell tin mine (Tasmania), one of the largest in the world, from Murchison United NL in a \$7.5 million cash and stock deal. Sirocco indicated that the

Tasmanian underground mine, which has been in production for more than 30 years and has produced 270,000 t of tin content from 20 million t of ore, would become its core asset and undergo further expansion. Renison Bell currently is producing 9,000 t of tin-in-concentrate annually, representing about 5% of Western World production. Under its purchase agreement, Sirocco has granted Murchison "top up" rights for a period of 3 years, allowing it to participate in future equity issues by Sirocco. In addition, there is a revenue-related royalty payable after the first 12,500 t of tin is produced annually in the event that the realized tin price exceeds \$4,000 per ton. Sirocco officials stated that their initial focus would be to pursue efficiencies through process improvements and to undertake a resource-to-reserve conversion program that would extend the current mine life to over 6 years. They indicated that retreatment of tailings accumulated at Renison Bell over the past 30-plus years and value-added downstream processing had the potential to increase production by 50% and lower the overall cost of tin production (American Metal Market, 2002a).

The tin industry continued to be roiled by events surrounding major American tin trader, Allied Deals Co. On May 13, three creditors that had already filed a Chapter 7 liquidation petition against Allied Deals on May 7, went a step further and asked the U.S. Bankruptcy Court to appoint an interim trustee. The three creditors charged that Allied had more than \$181 million in uncollected receivables. Allied's owners were arrested. Before September 2001, there allegedly was a single entity called Allied Deals that later became two organizations: RBG in England and Allied Deals in the United States. The status of the Vinto tin smelter in Oruro, Bolivia, which is wholly owned by RBG, and also the status of RBG's 50% stake in the Huanuni tin mine in Bolivia are uncertain. Bolivian Government officials have commenced discussions with RBG concerning the two facilities (Platts Metals Week, 2002).

The Steel Recycling Institute reported that steel can

recycling levels in the United States totaled 1.48 million metric tons (Mt) in 2001. About 2.55 Mt of steel cans were consumed. Most steel cans are fabricated from tinplate. The following indicates the amount of scrap cans consumed in 2001 by specific sectors (Container Recycling Report, 2002):

Steel mills	736,000 t
Detinning operations	90,100 t
Export markets	98,500 t
Resource recovery	558,200 t

Accelerated research and development efforts in industry, universities, national laboratories, and Government agencies have been identifying several promising lead-free solders to replace lead-containing solders in electronics applications. The leading candidates are: tin and 3.5% silver; tin and 3.5% silver and 0.7% copper; tin and 3.5% silver and 4.8% bismuth; and tin and 0.7% copper (all weight percentages). These lead-free solders are all tin rich with a melting temperature between 210° C and 227° C. They are recommended for such soldering applications as surface-mount technology, plated through-holes, ball grid arrays, fling chips, and others. But some unresolved issues still persist; for example, how reliable are

lead-free solder joints? Are new surface finishes needed? What are the solidification mechanisms in solder joints? At the 2002 Metallurgical Society Annual Meeting in Seattle, WA, a technical symposium on lead-free solders was held and sponsored by the Electronic Packaging and Interconnection Materials Committee. Several symposium papers on related topics are presented in the June 2002 issue of JOM (JOM, 2002).

### Update

On June 21, 2002, the Platts Metals Week composite price for tin was \$3.09 per pound.

### References Cited

American Metal Market, 2002a, Gold producer inks \$7.5M deal to buy Renison Bell tin mine: American Metal Market, v. 110, no. 67, May 7, p. 4.  
American Metal Market, 2002b, Tin plating mill proves it can flourish in a flat market: American Metal Market, v. 110, no. 69, May 20, p. 8.  
Container Recycling Report, 2002, Steel can recycling: Container Recycling Report, v. 13, no. 5, May, p. 2.  
JOM, 2002, Developments in lead-free solders and soldering technology: JOM, v. 54, no. 6, June, p. 25.  
Platts Metals Week, 2002, Allied Deals to be liquidated; executives jailed: Platts Metals Week, v. 73, no. 20, May 20, p. 1, 7.

TABLE 1  
SALIENT TIN STATISTICS 1/

(Metric tons, unless otherwise noted)

	2001 p/	2002		
		March	April	January- April
Production, secondary e/ 2/	10,800	900	900	3,600
<b>Consumption:</b>				
Primary	39,300	3,060 r/	3,020	12,300
Secondary	10,500	808 r/	799	3,250
Imports for consumption, metal	37,500	3,580	NA	NA
Exports, metal	4,350	164	NA	NA
Stocks at end of period	7,700	6,990 r/	6,870	XX
<b>Prices (average cents per pound): 3/</b>				
Metals Week composite 4/	314.88	278.81	288.55	XX
Metals Week New York dealer	211.48	184.84	191.47	XX
London, standard grade, cash	200.00	174.00	182.00	XX
Kuala Lumpur	200.77	173.63	180.62	XX

e/ Estimated. p/ Preliminary. r/ Revised. NA Not available. XX Not applicable.

1/ Data are rounded to no more than three significant digits, except prices.

2/ Includes tin recovered from alloys and tinplate. The detinning of tinplate (coated steel) yields only a small part of the total.

3/ Source: Platts Metals Week.

4/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges, and a risk factor. It is normally substantially higher than other tin prices.

TABLE 2  
METALS WEEK COMPOSITE PRICE 1/

(Cents per pound)

Period	High	Low	Average
<b>2001:</b>			
April	346.75	340.32	342.70
May	348.21	336.94	342.78
June	344.36	325.63	332.74
July	321.14	291.50	306.98
August	285.47	270.73	280.33
September	278.39	262.81	268.50
October	275.81	264.30	270.42
November	301.03	272.87	287.17
December	297.98	283.04	289.64
Year	359.89	262.81	314.88
<b>2002:</b>			
January	287.97	277.20	280.68
February	280.03	267.12	273.15
March	283.34	276.69	278.81
April	291.33	283.90	288.55

1/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges, and a risk factor. It is normally substantially higher than other tin prices.

Source: Platts Metals Week.

TABLE 3  
TINPLATE PRODUCTION AND SHIPMENTS IN THE UNITED STATES 1/

(Metric tons, unless otherwise noted)

Period	Tinplate waste (waste, strips, cobble, etc.) (gross weight)	Tinplate (all forms)			Shipments 2/
		Gross weight	Tin content	Tin per metric ton of plate (kilograms)	
2001 p/	77,500	1,710,000	8,130	4.8	2,010,000
2001:					
December	3,880	136,000	668	4.9	130,000
2002:					
January	W	187,000	683	3.6	191,000
February	5,330 r/	191,000 r/	640 r/	3.3 r/	152,000
March	4,440 r/	188,000 r/	588 r/	3.1	163,000
April	5,080	183,000	530	2.9	173,000

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data.

1/ Data are rounded to no more than three significant digits.

2/ Source: American Iron and Steel Institute monthly publication.

TABLE 4  
U.S. TIN IMPORTS FOR CONSUMPTION AND EXPORTS 1/

(Metric tons)

Country or product	2002			January- March
	2001	February	March	
<b>Imports:</b>				
<b>Metal (unwrought tin):</b>				
Bolivia	6,040	458	894	1,960
Brazil	5,510	480	521	1,220
Chile	122	--	--	--
China	6,360	139	698	1,310
Hong Kong	20	--	--	--
Indonesia	3,880	300	100	500
Malaysia	674	1	40	41
Peru	14,000	1,390	1,300	4,210
Russia	143	1	--	1
Singapore	145	--	--	--
United Kingdom	118	--	--	--
Other	434	13	24	69
Total	37,500	2,780	3,580	9,310
<b>Other (gross weight):</b>				
Alloys	3,830	273	176	830
Bars and rods	539	6	18	33
Foil, tubes, pipes	1	--	--	(2/)
Plates, sheets, strip	529	3	2	6
Waste and scrap	3,700	30	57	127
Miscellaneous	13,900	190	128	4,410
Total	22,500	502	381	5,400
Exports (metal)	4,350	170	164	712

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 5  
CONSUMPTION OF TIN IN THE UNITED STATES, BY FINISHED PRODUCT 1/

(Metric tons of contained tin)

Product	2002							
	2001 p/	March			April			January- April
		Primary	Secondary	Total	Primary	Secondary	Total	
Alloys (miscellaneous) 2/	1,500	136 r/	W	136 r/	137	W	137	539
Babbitt	316	19	22	41	20	22	42	210
Bar tin and anodes	248	13	W	13	14	W	14	59
Bronze and brass	2,640	94	133	227	102	123	225	842
Chemicals	8,020	630 r/	W	630 r/	630	W	630	2,540
Collapsible tubes and foil	W	W	W	W	W	W	W	W
Solder	15,700	871 r/	341	1,210 r/	868	341	1,210	4,690
Tinning	906	37	--	37	34	--	34	135
Tinplate 3/	8,130	588 r/	--	588 r/	530	--	530	2,440
Tin powder	W	W	W	W	W	W	W	W
White metal 4/	W	W	W	W	W	W	W	W
Other	1,530	67 r/	12 r/	79 r/	81	13	94	450
Total reported	38,900	2,460 r/	508 r/	2,960 r/	2,420	499	2,920	11,900
Estimated undistributed consumption 5/	10,800	600	300	900	600	300	900	3,600
Grand total	49,700	3,060 r/	808 r/	3,860 r/	3,020	799	3,820	15,500

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other." -- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes terne metal.

3/ Includes secondary pig tin and tin components of tinplating chemical solutions.

4/ Includes pewter, britannia metal, and jewelers' metal.

5/ Estimated consumption of plants reporting on an annual basis.